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O.R. NEWS

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THE O.R. ALUMNI NEWSLETTER OF THE DEPARTMENT OF

OPERATIONS RESEARCH AND ADMINISTRATIVE SCIENCES

BORSTING NEW PROVOST, SCHRADY NEW CHAIRMAN

BORSTING HEADS FACULTY

Professor Jack Borsting was appointed to the position of Provost of the Naval Postgraduate School on 2 January 1974 following the retirement of Dr. Milton Clauser. The position of Provost is the highest civilian position at NPS and has primary responsibility for the administration of educational matters.

Professor Borsting has been a member of the NPS faculty since 1959. He was appointed chairman of the department of Operations Analysis in June 1964. At this time the department faculty included Professors Andrus, Shudde and Oberbeck with Professors Cunningham from Physics and Torrance from Mathematics helping out. There were 85 students enrolled in the two-year program with new inputs of two sections every summer.

The department grew quite rapidly under Borsting's direction. By January 1971 the OA faculty numbered 43 and enrollment was 280 students. Three sections of students were enrolled twice a year. It was the largest OR department in the United States.

In February 1971 the OA department and the Business Administration and Economics department were merged by Provost Clauser and Professor Borsting became the chairman of the new Operations Research and Administrative Sciences department. The new department contained 76 faculty and had a student enrollment of over 600. Besides the OR curriculum, curricula in Management, Computer Systems Management, and Communications Management were offered. To assist him in administration of this new department, Professor Borsting appointed Professor Carl Jones as Associate Chairman for Academic Planning and Professor Donald Gaver as Associate Chairman of Research.

Since the merger the number of faculty has increased to 80 and the number of masters degree curriculums has increased to five. In addition, a doctoral program in OR has been established with two degrees having already been granted.

At the first department meeting following Borsting's appointment to Provost, Professor William Raike congratulated him on behalf of the department faculty and presented him with a golden (paper) crown. Raike remarked that "this was a 'golden' opportunity to acknowledge this crowning achievement in your career and that the Postgraduate School had thereby found a way to re-Dean itself."

(Continued on page 2)

(Continued from page 1)

SCHRADY CHAIRS OR/AS DEPARTMENT

On 4 April 1974 Provost Borsting announced that Associate Professor David A. Schrady had been appointed the new chairman of the OR/AS department. The position had been vacated in January when Borsting was appointed Provost. Associate Professor Carl Jones served as acting chairman from January through March.

Professor Schrady joined the Department of Operations Analysis in 1965 at the completion of his graduate work in OR at Case Institute of Technology. He was promoted from Assistant to Associate Professor in 1970 and received tenure the following year.

In addition to his teaching and research duties, Dave has most recently been the Academic Associate for the OR curriculum. He also has been a member of the NPS Research Council as a consequence of a one-year tour of duty with the Operations Research Branch of the Mathematical and Information Sciences Division of the Office of Naval Research in Washington, D.C. The Council is responsible for the administration of the ONR Foundation research program at NPS. Shortly after his return from the D.C. tour, Professor Schrady assisted Provost Clauser with the duties of the Dean of Programs during a three-month illness of Dean Koehler. Professor Schrady has been active in the Operations Research Society of America, and is a member of the Board of Directors of the Military Operations Research Society.

NATIONAL MEETINGS DURING CY'74

ORSA/TIMS Joint Meetings

22-24 April 1974	Boston, Massachusetts
16-18 October 1974	San Juan, Puerto Rico

Military Operations Research Society (MORS)

25-27 June 1974	West Point, New York
Winter 1974	Unknown location

Human Factors Society (HFS)

15-17 October 1974	Huntsville, Alabama

PARRY RETURNS

Professor Sam Parry has returned to the fold after six years. Parry began his teaching career the first time in 1964 as a military instructor in the old Department of Operations Analysis. Upon separation from active duty in 1966, he joined the ranks of civilian faculty as an Assistant Professor of Operations Analysis.

In September 1967 he went to Ohio State to work on his Ph.D. During his graduate study he worked as a graduate research associate at Ohio State and served as their principal investigator for developing land combat simulations for the Army. This research was the subject of his doctoral thesis. He received the Ph.D. in 1971.

In April 1971 he joined Midrex Division of Midland-Ross Corporation as manager of systems analysis. He also served as assistant operations manager for all Midrex plants, and as Project Manager for future plants.

In August 1973 he joined the faculty of the Naval Postgraduate School as Assistant Professor of Administrative Sciences and is currently teaching courses in management information systems to students in the Management curricula.

PROMOTIONS AND TENURE

Since the last Newsletter went to press the following faculty were promoted from Assistant to Associate Professor; Michael Block, James Hartman, Bruno Shubert, and David Whipple. Tenure was granted to Professors Richard Elster, Gilbert Howard, Mel Kline, Peter Lewis, William Raike and Michael Sovereign.

COCKTAILS AT MORS

Cocktail parties for former students and OR faculty were held at the summer and winter meetings of the Military Operations Research Society. The summer meeting was held in Annapolis in June and the party which included dinner was arranged by Cdr. Kronzer and his Naval Academy staff. A total of 45 attended. The winter meeting held at NPS was arranged by Professor David Schrady and was attended by 70 people. Get togethers such as these will be planned for future MORS meetings.

BGEN HALLGREN VISITS ARMY STUDENTS

BGEN Hal E. Hallgren, Commanding General of the Army's new Concepts Analysis Agency visited the department on 10 May 1973 to discuss the curriculum and tell students about CAA.

CAA, located in Bethesda, is a new high-level OR/SA organization providing analytical capability and studies as required by the Chief of Staff of the Army and the heads of Army Staff Agencies.

In his presentation to on-board USA students General Hallgren gave an overview of CAA's mission and the kinds of analysis the Agency is currently engaged in. He urged students to consider both experience tours and utilization tours at CAA.

FACULTY ACTIVE IN ORSA AND MORS

Professors Jack Borsting, Rick Butterworth, Glenn Lindsay and David Schrady are officers in the Operations Research Society of America. Professor Borsting has just become President-Elect of the Society. Professor Schrady is chairman of the Education Committee, Professor Butterworth is chairman of the Geographical Sections Committee, and Professor Lindsay is chairman of the Military Applications Section. Prior to the recent election Professor Borsting was Secretary of the Society.

Other faculty who are active in ORSA include Professor Kneale Marshall who is an associate editor for manpower models and related topics for the journal Operations Research, Professor Donald Gaver who is a member of the council of the Transportation Section; this section publishes the journal Transportation Science, and Professor James Hartman who is on the Membership Committee.

Professors David Schrady and Michael Sovereign are currently members of the Board of Directors of the Military Operations Research Society (MORS). Professor Borsting is a past president of the Society and Professors Glenn Lindsay and James Arima were on the Board of Directors last fiscal year.

OR SPONSOR'S COMMENT

A personal visit to the Postgraduate School in March was extremely worthwhile. I was deeply impressed with students that I met and thoroughly enjoyed the opportunity to tell them about a recent series of real-world analyses structured to be of use to defense policy makers at the highest level. The analysis consisted of a net assessment of the U.S. and Soviet Navies in a side by side and head to head comparison.

Another item of particular interest to all of us is the Officer Professional Development Study which is underway in Washington. This effort is bound to have a significant impact on the future of postgraduate education in general and OA in particular. We are carrying out an indepth review of the 8510 billet structure and will provide the results to the study group. Our present P-Code structure is sound, but there is room for some fine tuning. As with all CNO studies, the Systems Analysis Division will be actively involved in monitoring the progress of the OPDS.

If the Operational, Technical and Managerial System (OTMS) is to work, the billets requiring subspecialty talents must be adequately identified, the officers who will fill those billets must be trained, and finally, those officers with the education and experience should be screened to identify proven performers in the subspecialty areas. On this last point, my deputy participated in the OA proven subspecialist screening last year. His overall impression was that the OA community is one of the "healthiest." For information I am including the community size and shape, just as it was published in the December 1973 Officer Newsletter.

OA Community

Rank	Population	Selected Proven	Percent
CAPT	97	35	36
CDR	165	51	31
LCDR	268	39	15
Total	530	125	24

In closing I would invite your attention to the publication of the Navy Missions Study described on page 9 of this edition of OR NEWS.

HARRY D. TRAIN, II
Rear Admiral, USN

SECOND PH.D. AWARDED

LCDR Norman J. Shackelton received his Ph.D. in Operations Research in September 1973, and is the second graduate of the department's doctoral program. Shackelton's dissertation titled "Minimizing the Cost of Projects in Naval Shipyards," addresses the problem of project scheduling subject to resource restrictions. His disseration advisor was Professor William Raike. The research was motivated by a memo to Professor Alan McMasters from a 1970 OR graduate, LCDR Raymond D. Hager while he was stationed at Mare Island Naval Shipyard.

BALUT RECEIVES MATH AWARDS

LCDR Stephan Balut, the first recipient of a Ph.D. in OR at NPS (March 1973) continued his studies last spring and received a Masters of Science degree in Mathematics in June 1973. His thesis was titled "A Branch and Bound Algorithm for the Delivery Truck Problem." At the time of the receipt of the Masters degree he was also presented with the Mewborn Student Research Award and the W. R. Church Award for outstanding performance in mathematics courses. The Mewborn Award was in recognition of his research work in investigation theory and related areas. In this connection his paper "Scheduling to minimize the number of late jobs when set-up times and processing times are uncertain," appeared in the July 1973 issue of Management Science. Steve won the Church Award by taking 14 mathematics courses during his tour at NPS and receiving a grade of A in every one.

During the quarter while he was finishing work on his Master's degree in Mathematics he also taught a section of OA 3203 (Survey of Operations Analysis/Systems Analysis) to a group of mechanical engineering Masters students.

THREE ALUMNI WIN CASH AWARD

MAJ James Eyre, USMC, CAPT Charles Machiaroli, USA, and LT Amos L. Maples just received a joint cash award of $65 from the City of Monterey for their entry in the contest for designing traffic signals to maintain the esthetic appearance of the historical area of the city. This design was prepared while these men were taking OA 3658, Human Factors in System Design, from Professor Gary Poock.

BACON AND HORNBACK WIN CNO AWARDS

The Chief of Naval Operations Award for excellence in Operations Research is presented semi-annually to an outstanding U.S. Navy or Marine Corps graduate of the Operations Research curriculum. The award is made on the basis of academic record, performance during a student's experience tour, and faculty recommendations.

LCDR Daniel K. Bacon received the CNO award in September 1973 and LT James L. Hornback received it in March 1974.

NEW ASW PROGRAM

The ASW Program is the newest curriculum at the Naval Postgraduate School and is sponsored by OP-95. Formally called the Operational Systems Technology (ASW) curriculum, it is an interdisciplinary program administered academically by the ASW Academic Program Committee comprised of seven faculty. The chairman of the committee is Professor Peyt Cunningham, Distinguished Professor of Physics and Operations Research. Professor Carl Jones, the OR/AS department's acting chairman is also a member. The five other faculty in the committee come from the department of Physics Mathematics, Electrical Engineering, Meteorology, and Oceanography.

The program is designed to enhance the operational and command competence of unrestricted line officers in the warfare specialties for the subcategory of ASW and the Additional Qualification Designator of ASW Operational and Technical Expert (8321P). Service in at least one ASW related afloat billet is a requirement for acceptance into the program.

The degree Master of Science in Systems Technology is awarded at the completion of an eight quarter curriculum which covers the six academic disciplines represented by the faculty member of the Group. A three quarter elective sequence in the second year is intended to provide a student with depth in one of these disciplines. In addition, an acceptable group project or thesis is required.

OP-964 RESEARCH PROJECT

As most of you know, the sponsor of the OR/SA curriculum is OP-96, the Systems Analysis Division of the Office of the CNO. In fact, many alumni spent time at OP-96 on experience tours or after graduation. In addition to sponsoring the curriculum, OP-96 provides faculty research support under the heading of Conceptual Analysis Capability. This funding pays for faculty who serve as outside reviewers of OP-96 studies in progress or do research on topics of interest to OP-96. The faculty research effort may provide the sponsor with the suggestions or developed theoretical techniques which can be applied to some of their problems. Participation by a large number of faculty has been an objective.

Professor Mike Sovereign has served as coordinator of the program for several years. Three faculty have served as reviewers of OP-96 studies; Professor Dave Schrady reviewed the Ships' Supply Support Study, Professor Dave Whipple reviewed the Boeing Navy Health Study, and Professor Sovereign reviewed the Ship Overhaul and Maintenance Study.

Recently, in the research phase, Professor Glenn Lindsay has worked on reliability and testing of munitions stockpiles. He has obtained a distribution of reliability among stored ordnance of different ages since it was new or reworked, which is a function of ordnance selection and expenditure for training and the rate and effectiveness of reworking old ordnance. Basic to this distribution is the assumption of an exponential decay in the reliability of objects of the same age. Professor Katsuaki Terasawa has explored the problem of ship replacement. He observed that current replacement policies are based only on cost minimization. The objective function does not include a component related to fleet effectiveness, although a subjective component probably is introduced by a decision maker. He suggests that more thought should be given to the explicit inclusion of such a component. Professor Michael Block has been studying the methodology used by the Navy in determining its policies for leasing tankers. In particular he has been examining the influence of discount rate on an optimal leasing policy. He has also been looking at the economic value of "hardening" such tankers. Professor Russell Richards devised a statistical test of a simulator being used in a supply systems study. Sovereign has written a paper on the effect of technological change on the Navy budget which suggests that the Navy should think about the way costs change over time.

Other participants since the projects inception have been Professors Carl Jones, Clair Peterson, Paul Carrick, Donald Gaver, and William Raike.

ALUMNI JOIN NMSC FACULTY

Two OR graduates have been assigned to the Naval Postgraduate School as faculty of the Naval Management Systems Center. LCDR David R. Campbell received his M.S. in OR in September 1971 and has remained at NPS as an OR doctoral student. He joined the NMSC faculty in September 1973. He is currently working on his dissertation when he is not teaching.

LCDR John M. Cook, SC, received his M.S. with distinction in June 1968. He joined the faculty of the NMSC in October 1973. Between these times he was stationed in Washington, D.C., at Naval Supply Systems Command Headquarters where he worked on Uniform Inventory Control Point Systems Design. LCDR Cook was then assigned as Supply Officer on the USS REGULUS (AF-57). He received the Navy Achievement Medal for Outstanding Professional Performance as Logistics Officer for the salvage task force which subsequently stripped and decommissioned the REGULUS after she grounded in Hong Kong during Typhoon Rose in August 1971. He then served as Supply Officer of the USS VEGA (AF-59) making two additional WESTPAC cruises before reporting to Monterey.

PH.D. PROGRESS REPORT

Nine doctoral students successfully passed their written and oral comprehensive exams during this past year. They include LT Dennis Altergott, LT James Capra, LCDR Richard Haskell, LCDR William Hayne, LCDR Robert Powers, LCDR Robert Rantschler, LCDR John Schrader, LCDR James Swan, and KKPT Harold Ziehms (Federal German Navy). The first granting of a Ph.D. to a member of this group is anticipated for September 1974.

Other doctoral students in the program who are taking courses include LCDR Merlin Bell, LCDR William Daeschner (SC), MAJ Rizwan Nomani, USA, and LCDR Paul Tully (SC).

MODELING SOFTWARE RELIABILITY

Professor Norman Schneidewind has been involved in developing models for software reliability and quality control under the sponsorship of the Naval Electronics Laboratory Center and the Office of Naval Research. The aim of this research is to assist the Navy in its efforts to improve the quality of software delivered to the Fleet and to provide more control over software production costs.

Current research is concerned with: (1) developing quantitative measures of software reliability and quality, (2) constructing models to forecast error detection and correction processes for quality control purposes, and (3) correlating software structures with software error characteristics for the Naval Tactical Data System (NTDS). Current analysis employs data from the NTDS software trouble reports.

Recent results from attempting to forecast the mean number of cumulative errors over a specified time interval suggests that the number of errors generated by some of the NTDS modules follows a non-homogeneous Poisson process with a decreasing intensity function. Tests are planned to appraise the extent to which error generation by all the NTDS modules follows this process.

PROGRESS IN MANPOWER PLANNING MODELS

Professor Kneale Marshall is continuing his research work in manpower planning models. In the past, this work has been sponsored by the Office of Naval Research; it is currently under the sponsorship of the Manpower Planning Branch, Headquarters Marine Corps.

The project has two main thrusts: 1) the development of theory through work with thesis students, and 2) the building and implementation of planning models via a national interactive computing system. Currently two Ph.D. students are writing theses in the area, and Professor Marshall, in conjunction with a colleague, Professor Richard Grinold of the University of California at Berkeley, is writing a book on manpower flow models.

The interactive part of the project makes it different from many previous manpower studies. Models are programmed in Monterey and put into files in a nationwide network. The Manpower Management Information Branch (MPI) and the Manpower Planning and Policies Branch (MPP) of the Marine Corps in Washington, D.C., have put manpower data into their own files in the same system. The staff in MPP can copy the programs by telephone hook-up and use them in the planning and budgeting cycles. Similarly, the data files at the Marine Corps Headquarters can be accessed in Monterey. Changes to the programs are easily made in Monterey at the request of the staff in Washington.

As a consequence of the interactive process of model building and implementation, the Naval Postgraduate School learns the real problems on which the Marine Corps needs help or has access to real data, and the Marine Corps gets to use the technical expertise of the Postgraduate School faculty and students while they remain out of the fire-fighting business. This method of instigating and applying research appears to have a bright future and current plans are to continue along the same lines.

PROCUREMENT RESEARCH

The Navy's Procurement Research Program was established within the OR/AS Department in August 1972 as a consequence of a recommendation to DOD by the Congressional Committee on Government Operations which recognized "the acute need and potential savings to be gained from a good mechanism for developing new procurement ideas, testing them, and applying lessons learned ..." Currently the program is under the supervision of Professor Peter De Mayo, CDR, USN. The sponsor is the Deputy Chief of Naval Material (Procurement and Production).

The program is still evolving and the present orientation is toward the broad area of weapons acquisition problems and techniques. Several faculty are participating in the program. Several students are participating through experience tours and thesis topics.

Although the current funding is from the Naval Material Command, other agencies who have procurement related problems may obtain assistance by contributing to the funding. Possible subjects for research work are also solicited.

POOCK PRODUCES FIRST COLOR KIRLIAN MOVIES OUTSIDE RUSSIA

Some of the first color movies of Kirlian photography outside the Soviet Union were produced recently by Professor Gary Poock and are the result of three years of personally funded independent research into the phenomenon of corona discharge caused by the ionization of atmospheric gases.

Shown in the 30-minute 16mm film are bright coronas like those around the moon during a solar eclipse. They surround the fingertips of Poock and technical assistant Paul Sparks, in addition to leaves and other objects. The film shows real-time action of the Kirlian image as it actually occurs. The coronas are made up of flashes of light caused by the escape of static electricity from a charged plate to the surface of the human body or other objects of lower electrical potential that are brought into contact with the plate.

Early in 1973 Professor Poock and Mr. Sparks devised their method of filming the corona produced on a transparent plastic plate with a movie camera. After the three-layer plate is electrically charged, the discharges are photographed through an electronic intensifier since the coronas can barely be seen by the naked eye, even in a completely darkened room.

During the last six months Poock has received more than 1500 inquiries by mail and phone about his investigation in Kirlian photography. Many scientists and medical people believe that by observing the colors and patterns generated in Kirlian photography, a new medical diagnostic tool could be developed in which a particular disease might have its own characteristic colors and pattern. Industrially, there are many suggested uses for Kirlian photography, especially in stress and structural analysis, chemical cohesion and quality control. Professor Poock believes that the Kirlian technique needs refining before research is done in these areas.

Kirlian photography was pioneered in Russia in the late 1930's by scientists Semyon Kirlian and his wife. Poock became interested in the process through his reading of translations of Soviet scientific journals and American research reports. Unfortunately, the Soviets have not made their color movie film techniques available to the West.

Poock doesn't know if the Russians are aware of his progress. But they will be apprised of it when an article he has written appears in a summer issue of a technical journal widely circulated among Kirlian photographers.

FY '74 BUDGET CUT

The House Appropriations Committee legislated a 20% cut in graduate education for the military in FY 74. This 20% cut was both in the average on board count of graduate students in the Army, Air Force and Navy, and in degree-seeking O&MN dollars. Because of the tardiness of the Budget passage, these cuts were infeasible for the Navy to implement during FY 74. The Secretary of the Navy wrote a letter asking for authority to reprogram funds and to not capriciously order students to terminate the graduate education programs in which they were enrolled. The House Appropriations Committee granted the Navy's request with the proviso that the cuts would be at the requested level in FY 75.

In an attempt to comply with the cuts in the on-board students at NPS, all 15 Navy students scheduled to graduate from the OR program in March 1974 had their last quarter courses eliminated so that they could devote their full time to completion of their theses. The first students completed their theses by 26 January and the last by 28 February. The students in this speed-up program all had very high grade point averages. The remaining OR students were allowed to complete their programs on schedule.

At present, the School and the Navy are working on budget cut problems for FY 75. These budget cuts will be hard to absorb because the School's budget is not linear with the number of students. The School is also making an increased effort to attract more non-Navy service students and foreign students to the various programs. Finally, increased emphasis will be placed on research and development and the Continuing Education concept.

More details on the impact of the budget cuts will appear in a future newsletter.

EDITOR'S MEMO

THANKS TO ADMIRAL TRAIN

We are pleased to present for the first time in our Newsletter a message from the Sponsor. It appears on page 3 and we wish to express our thanks to Admiral Train for his contribution.

MARINES, WHERE ARE YOU?

Since the Marine Corps does not have a central source of addresses for its officers there is no way for us to get current addresses so we can mail the Newsletter to all Marine alumni. We have no mailing addresses for at least one-half of the Marine graduates. Our memo which appeared in the Marine Corps Gazette went unnoticed. Therefore, we ask that each Marine graduate who is on our mailing list to send us the address of a Marine graduate who has not received the Newsletter (please!). Thanks in advance.

ABOUT THAT QUESTIONNAIRE

Joe Cyr and I would very much appreciate your filling out the Alumni Questionnaire on the last page of this Newsletter. As you will note, it is backed by a franked return address so it does not require your stuffing it in an envelope. If your address has not changed, just leave the change of address form blank.

ALAN W. McMASTERS
Editor

CURRICULAR OFFICER NOTES...

ADMINISTRATION CHANGES

CDR J. R. Moore has retired and the new OR Curricular Officer is LCDR J. L. Cyr. The new Assistant Curricular Officer is LCDR Michael Waters (ROL9) whose last duty tour was aboard the USS HANCOCK (CVA-19).

There have also been some changes in the layout of the curricular office. The Academic Associate has moved to the office formerly occupied by the OR/SA secretaries; the secretaries now enjoy a larger office across the hall which is adjacent to our new "OA student lounge."

PROGRAM CHANGES

In the face of decreasing funds, NPS has been forced to eliminate the six-week refresher program. New students now will report no earlier than five working days prior to the start of the quarter.

ALUMNI FEEDBACK QUESTIONNAIRE

Those of you who have been in a billet, P-coded or not, where your OR education was utilized are asked to complete the questionnaire on the last page of this Newsletter.

J. CYR

A BOOK ON MISSION EFFECTIVENESS ANALYSIS

On 16 November 1973, OSD and USN published a joint study entitled Study of Missions Involving General Purpose Naval Forces. Volume III of that report was a comprehensive review of the current capability to perform mission effectiveness analysis of Naval GPF. It was recognized that the volume filled a gap that had always existed in the literature and the decision made to publish it as a text book.

The book is organized so that each chapter is a separate entity that can be read in isolation from the rest of the book. The first chapter is an executive overview of the contents. The second chapter discusses the evolution of mission effectiveness analysis in the Department of Defense; the different levels of application of analysis to military problems along with the uses and shortcomings of each level; and, finally, the current capability to carry out mission effectiveness analysis and the uses and limitations of such analysis. Each of the next seven chapters examine the current status of analysis as applied in seven different warfare areas: submarine ASW; surface combatant ASW; aircraft ASW; antiair warfare; strike air warfare; mine warfare; and amphibious warfare. Each chapter discusses the forces involved and the functions they perform; describes the real world situation to be modeled pointing out the complexities involved; discusses typical measures of effectiveness used in the analysis including the advantages and disadvantages of each; describes representative methodologies used; discusses critical inputs and assumptions required to carry out the analysis along with the uncertainties involved in selecting these critical parameters; and finally discusses the impact of these uncertainties on the results of the analysis. The last chapter describes the application of mission effectiveness analysis through a thorough examination of three major Navy studies: the 1967 Major Fleet Escort Force Level Study (MFE); the 1971 Selected Analysis of Sea Control and Navy TACAIR Capabilities (NARAC-G); and the 1972-73 Selected Analysis of Sea Control and Navy TACAIR Capabilities (SEAMIX I).

The book does not discuss in any detail the tools and techniques for carrying out the analysis since this is all available in the literature. Instead its intent is to serve a complementary function to such material. It describes and gives a perspective about: the purpose of analysis in the Navy and DOD; how it is carried out at different levels of complexity; how it is all integrated into a mission effectiveness analysis; what our current problems and difficulties are; and what such analysis is good for and what is not good for.

In order to estimate the requirements for such a text, the Navy would like to have an estimate of what organizations would be interested and how many copies they would require. Since the text will necessarily be classified (SECRET), only cleared facilities should express an interest. Please send expressions of interest to the book's editor,

Dr. Edwin L. Woisard
Assistant for Navy Net Assessment (OP-090N)
Office of the Chief of Naval Operations
Washington, D. C. 20350

EDITORIAL STAFF

EDITOR'S NOTE: This page contains a questionnaire and a change of address notice. The page is backed with a pre-addressed return cover. To return any of this material to us, just remove this page, fold it in thirds as you would a letter (with the Superintendent's address and the blank third showing), staple it together, and drop it in the mail.

ALUMNI FEEDBACK QUESTIONNAIRE

1. What year did you graduate? _____.

2. Considering the courses you took subsequent to the second quarter (we assume that the first and second quarter courses are relevant):

   a) Which course proved to be most useful to you?

   b) Which courses would you eliminate?

   c) Which courses would you make optional?

3. Considering the courses in the OR program which you decided not to take, which ones, if any, do you think would have been most useful?

4. Indicate which area you feel should have the most emphasis (M); the least emphasis (L):

a)	Systems Analysis and Economics	M	L
b)	Math Programming	M	L
c)	Simulation and Gaming	M	L
d)	Probability and Statistics	M	L
e)	Human Factors	M	L
f)	Other (please specify)	M	L

5. Additional comments about the curriculum:

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